

# TALK

**VIDEO**

FROM THE MAKERS OF "SCOTCH" BRAND MAGNETIC TAPE

BULLETIN NUMBER 3  
APRIL 1, 1960

## Effects of Total Circuit Gain and Demodulator Performance on Dropouts

A signal dropout in a video recording system consists of an abrupt negative amplitude modulation notch in the carrier. Accordingly, the effectiveness of limiter circuitry in the demodulator can have marked effects, in turn, on how clearly this AM component reproduces through the FM system.

An examination of the playback carrier prior to its introduction into the limiter stages discloses that, with most samples of tape, the signal contains an entire family of dropouts of different amplitudes and durations. The change in amplitude of the carrier during these momentary events may range from only a few per cent reduc-

tion to a complete failure. In addition, a majority of these dropouts are never seen, as their effects are absorbed by the action of the limiters in the demodulator chassis.

When aging of limiter tubes or other circuit changes result in a partial loss of total limiting gain, more and more of the carrier depressions reach the discriminator and become visible on the television screen. Furthermore, improper transient response in the RF amplifying system can exaggerate the duration and amplitudes of the carrier dropouts, making their effects more pronounced.

Excessive noise in the early stages preceding limiting also can reduce dropout

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immunity, since the carrier cannot be recovered by the limiter when momentarily reduced to a value less than the noise level.

Thus, it appears that a partial loss in limiting gain and RF signal-to-noise ratio in the reproduce circuitry will affect drop-out performance to a greater degree than it affects visible background noise in the picture. This is to be expected, as limiting gain is usually in excess of 50 db, while satisfactory signal-to-noise ratio, picture-wise, is less than this value.

As a result, the effects of circuit malfunctions are sometimes mistaken for defective tape. In the last analysis, it is almost impossible to set up quantitative classifications of video tape from a drop-out point of view unless one also includes, at least, the parameters of limiting gain, system noise, and transient response.